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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/516,494

09/26/2005

Jung-won Kang

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11/14/2008

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EXAMINER

WALTERS JR, ROBERT S

ART UNIT

PAPER NUMBER

1792

MAIL DATE

DELIVERY MODE

11/14/2008

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/516,494	<b>Applicant(s)</b> KANG ET AL.	
	<b>Examiner</b> ROBERT S. WALTERS JR	<b>Art Unit</b> 1792	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 29 October 2008.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-10 is/are pending in the application.
- 4a) Of the above claim(s) 8-10 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-7 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                       | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>12/1/2004, 9/1/2006, 5/3/2007</u> .                           | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Status of Application***

Claims 1-10 are pending. Claims 8-10 are withdrawn as being drawn to a non-elected invention. Claims 1-7 are presented for examination.

### ***Election/Restrictions***

Applicant's election without traverse of claims 1-7 in the reply filed on 10/29/2008 is acknowledged.

Claims 8-10 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention, there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on 10/29/2008.

### ***Specification***

### **Abstract**

The abstract of the disclosure does not commence on a separate sheet in accordance with 37 CFR 1.52(b)(4). A new abstract of the disclosure is required and must be presented on a separate sheet, apart from any other text.

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### ***Claim Objections***

Claims 4 and 5 are objected to because of the following informalities: Claim 4 should read silicon instead of silicone. Claim 5 should read C1-4 alkoxy in Formulas 3 and 4.

Appropriate correction is required.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later

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invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

1. Claims 1-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ko et al. (U.S. PG PUB No. 2001/0055891).

I. Regarding claims 1-6, Ko teaches an organosilicate polymer and the method for preparing that polymer by mixing a pore-forming component, which may be a thermally decomposable organic silane compound having at least one silyl group at the end (component (b), see 0036), and a silane compound or oligomer (component (a), see 0028) and then adding water and a catalyst to conduct hydrolysis and condensation (0037). Ko teaches that the organic substance can be decomposed at 450 °C or less and may be an ether (0036), and that the silane compound is comprised of silicon, carbon, oxygen, and hydrogen (0032). Ko further teaches that the silane oligomer can be selected from the group as disclosed in pending claim 5 (0029 and 0032), this compound having silane compounds at both ends. Ko fails to teach that the decomposable organic silane compound is capped with silane at both ends and has the general structure of claimed Formula 1. It should be noted that Ko does teach structures similar to Formula 1 for the silane component ( $(R^3_p Y_{3-p} Si-M-Si R^4_q Z_{3-q})$ ), wherein the organic component M is not a decomposable organic component, but everything else is identical to claimed Formula 1 (see 0029 and 0032). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify Ko's polymer and method by having the pore-forming component be a thermally decomposable organic silane that is capped with silane at both ends

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and has the structure of Formula 1. One would have been motivated to make this modification as one of ordinary skill in the art at the time of the invention could have modified Ko's method and polymer to synthesize the pore-forming component with the structure of Formula 1 with a reasonable expectation of success. Furthermore, one of ordinary skill in the art at the time of the invention would expect that the hydrolysis and condensation steps would still function with this pore-forming component having the structure as claimed in Formula 1 and would provide the predictable result of an organosilicate polymer having an element that could be decomposed to provide a porous film with applications as a dielectric.

II. Regarding claim 7, Ko teaches a coating composition for forming an insulating film (see Example 3 at 0049-0051) comprising an organosilicate polymer having a pore-forming component, which may be a thermally decomposable organic silane compound having at least one silyl group at the end (component (b), see 0036), and a silane compound or oligomer (component (a), see 0028) and an organic solvent (0050). Ko fails to teach that the decomposable organic silane compound is capped with silane at both ends. It should be noted that Ko does teach structures having an organic silane compound that is capped with silane at both ends ( $(R^3_p Y_{3-p} Si-M-SiR^4_q Z_{3-q})$ ), wherein the organic component M is not a decomposable organic component. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify Ko's composition by having the pore-forming component be a thermally decomposable organic silane have the structure ( $(R^3_p Y_{3-p} Si-M-SiR^4_q Z_{3-q})$ ), wherein the organic component M is actually a thermally decomposable element, thereby having a thermally decomposable organic silane that is capped with silane at both ends. One would have been

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motivated to make this modification as one of ordinary skill in the art at the time of the invention could have modified Ko's composition to have the pore-forming component have the structure  $(R^3_p Y_{3-p} Si-M-SiR^4_q Z_{3-q})$ , wherein the organic component M is actually a thermally decomposable element, thereby providing a thermally decomposable organic silane that is capped with silane at both ends. Furthermore, one of ordinary skill in the art at the time of the invention would expect that the hydrolysis and condensation would still function with this pore-forming component and would provide the predictable result of a coating composition having an element that could be decomposed to provide a porous film for utilization in applications as a dielectric.

### ***Conclusion***

Claims 1-10 are pending.

Claims 8-10 are withdrawn as being drawn to a non-elected invention.

Claims 1-7 are rejected.

No claim is allowed.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to ROBERT S. WALTERS JR whose telephone number is (571)270-5351. The examiner can normally be reached on Monday-Thursday, 6:30am to 5:00pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Barr can be reached on (571)272-1414. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/ROBERT S. WALTERS JR/  
November 10, 2008  
Examiner, Art Unit 1792

/Michael Barr/  
Supervisory Patent Examiner, Art Unit  
1792

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